Cardiovasc Intervent Radiol (2023) 46:1428–1429
https://doi.org/10.1007/s00270-023-03526-7

Do We Still Need 5α-Reductase Inhibitors for Patients with Benign Prostatic Hyperplasia After the PARTEM Study?

Tiago Bilhim[1]

Received: 18 July 2023 / Accepted: 22 July 2023 / Published online: 8 August 2023
© Springer Science+Business Media, LLC, part of Springer Nature and the Cardiovascular and Interventional Radiological Society of Europe (CIRSE) 2023

Would like to congratulate the French interventional radiology teams who recently published a relevant randomized controlled trial comparing prostatic artery embolization (PAE) with medical therapy for patients with benign prostatic hyperplasia (BPH) [1]. The **P**rostatic **ART**ery **E**mbolization versus **M**edical therapy–PARTEM—study was a multicenter randomized trial enrolling patients from 10 hospitals, across France that started in 2016 and was completed in 2022. Included patients needed to have bothersome lower urinary tract symptoms (LUTS) with an international prostatic symptom score (IPSS) > 11 points and quality of life (QoL) score > 3 points and a prostate volume ≥ 50 mL. All included patients needed to have at least 1 month duration of medical therapy with alpha-blockers but no prior usage of 5α-Reductase Inhibitors (5-ARIs). After randomization to PAE, patients stopped the alpha-blockers, whereas patients randomized to combination therapy (CT) received both alpha-blockers and 5-ARIs. Thus, non-medicated PAE patients were compared with patients receiving medical CT at 9 months ($n = 44$ PAE; $n = 43$ CT) and 2 years ($n = 42$ PAE; $n = 38$ CT). The primary outcome measure compared between groups was the reduction in IPSS score at 9 months follow-up.

Alpha-blockers are the first-line medical treatment option for patients with BPH and bothersome LUTS, whereas 5-ARIs are recommended when the prostate volume is > 40 mL. Alpha-blockers induce immediate relief of LUTS and can lead to (orthostatic) hypotension. Even though alpha-blockers do not adversely affect libido and have a small beneficial effect on erectile function, they often cause ejaculatory dysfunction. 5-ARIs have no immediate impact on LUTS and need years of continued usage to prevent BPH progression and BPH-related complications [2]. 5-ARIs are known to decrease sexual desire and increase the risk of erectile dysfunction in patients with BPH [3]. More recently, it has also been suggested that 5-ARIs are associated with an increased risk of developing depression over time, with no difference between finasteride or dutasteride [4].

This trial is relevant not only for IR, but for global readership as well. It is the first and only one to date comparing safety and effectiveness of PAE with medical therapy. It is also one of the best prospective comparative studies looking at the different domains of male sexual function, including erectile and ejaculatory functions. PAE-induced ejaculatory disorders have been reported in 24–29% of treated patients when analyzed retrospectively with confounding from medical therapy usage [5, 6]. This study provides strong evidence that PAE does not induce ejaculatory dysfunction nor erectile dysfunction and that PAE is, actually, safer than combination medical therapy regarding sexual function preservation. No patient in this trial reported "de novo" ejaculatory or erectile dysfunction using validated questionnaires prospectively collected. All sexual function domains including erection and ejaculation improved after PAE [1].

Worth noting that adherence to medical CT was prospectively assessed and a non-adherence rate of 23% was reported at 9 months increasing to 26% at 2 years, which might have influenced the results, but represents real-life scenarios. Patients were allowed to be kept on

✉ Tiago Bilhim
tiagobilhim@hotmail.com

[1] Consultant Interventional Radiologist, Interventional Radiology Unit, Centro Hospitalar Universitário de Lisboa Central (CHULC), Lisbon, Portugal

monotherapy with alpha-blockers or use other BPH medications. Prostatic intervention rates at 2 years were 5/42 (12%) in the PAE group (5 patients received prostatic laser surgery at 18 months) versus 18/38 (47%) in the CT group (14 patients received PAE and 4 patients received prostatic laser surgery at 14 months). Also, 63% of patients in the CT group envisioned a prostatic intervention in the near future due to continued bothersome LUTS and/or medication-related adverse events. These findings come in line with the significantly superior improvements in IPSS/QoL scores in the PAE group when compared with the CT group (4-point difference for IPSS and 1.7-point difference for QoL scores). The 9 month IPSS reduction was 10 points for the PAE group versus 5.7 points in the CT group ($p = 0.0008$). Prostatic medication usage at 2 years post-PAE was 14/42 (33%) consisting mostly of alpha-blockers, highlighting that it is not a matter of PAE versus alpha-blockers, rather PAE versus 5-ARIs. It is suggested that the 5-ARIs long-term usage reduces the risk of BPH-related complications and progression due to the fact that prostate volume reduces by 25% and PSA by 50% (biomarkers of BPH) (2). In this trial there was a 22–26% decrease in prostate volume and a 40–44% decrease in prostate-specific antigen (PSA) levels at 2 years without significant differences between PAE and CT groups. Also, the improvement in peak urinary flow-rate (Qmax) was similar between groups. These findings highlight the potential benefit of PAE as a treatment and prevention tool for BPH patients. Remains to be answered if these improvements in objective parameters are sustained in the long-term.

Naturally, this study could not compare PAE with alpha-blockers or 5-ARIs monotherapy and almost a third of PAE patients were taking alpha-blockers at 2 years, whereas 26% of patients in the CT group stepped down to monotherapy with alpha-blockers, with potential for confounding. 5-ARIs advocators will probably argue that 2 years is a limited time span to assess the real long-term benefit of this medication and that this study would need a 5 year follow-up to assess the added value of CT therapy. Would argue: how many patients would still be adherent to CT at 5 years? We need more IR-led high-quality research as this one. This study proves that PAE is more effective than medical combination therapy for LUTS relief in patients with BPH, reducing the need for invasive prostatic interventions in the first 2 years. PAE does not induce erectile or ejaculatory dysfunction and might have a relevant role in reducing the risk of disease progression and BPH-related complications similarly to 5-ARIs. In the end, the relevant question after this trial is: who needs 5-ARIs now if you have PAE for BPH patients?

Funding None.

Declarations

Conflict of interest Tiago Bilhim is a paid consultant for Merit Medical and has received speaker fees for Philips Medical, Cook Medical, Terumo and is a stock holder for EmbolX.

Ethical Approval Institutional review board approval was not needed.

Consent for Publication Tiago Bilhim had control of the publication.

References

1. Sapoval M, Thiounn N, Descazeaud A, et al. Prostatic artery embolisation versus medical treatment in patients with benign prostatic hyperplasia (PARTEM): a randomised, multicentre, open-label, phase 3, superiority trial. Lancet Reg Health Eur. 2023;31:100672. https://doi.org/10.1016/j.lanepe.2023.100672.
2. Cornu JN, Gacci M, Hashim H, et al. EAU guidelines on non neurogenic LUTS including benign prostatic obstruction. European Association of Urology. 2023. https://uroweb.org/guideline
3. Corona G, Tirabassi G, Santi D, et al. Sexual dysfunction in subjects treated with inhibitors of 5α-reductase for benign prostatic hyperplasia: a comprehensive review and meta-analysis. Andrology. 2017;5:671–8.
4. Garcia-Argibay M, Hiyoshi A, Fall K, Montgomery S. Association of 5α-reductase inhibitors with dementia depression, and suicide. JAMA Netw Open. 2022;5(12):e2248135. https://doi.org/10.1001/jamanetworkopen.2022.48135.
5. Abt D, Hechelhammer L, Müllhaupt G, et al. Comparison of prostatic artery embolisation (PAE) versus transurethral resection of the prostate (TURP) for benign prostatic hyperplasia: randomised, open label, non-inferiority trial. BMJ. 2018;361:k2338. https://doi.org/10.1136/bmj.k2338.
6. Ray AF, Powell J, Speakman MJ, et al. Efficacy and safety of prostate artery embolization for benign prostatic hyperplasia: an observational study and propensity-matched comparison with transurethral resection of the prostate (the UK-ROPE study). BJU Int. 2018;122(2):270–82. https://doi.org/10.1111/bju.14249.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.